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Tech

Lightning Labs Releases Software to Allow Bitcoin Developers to Mint and Transfer Assets on the Blockchain

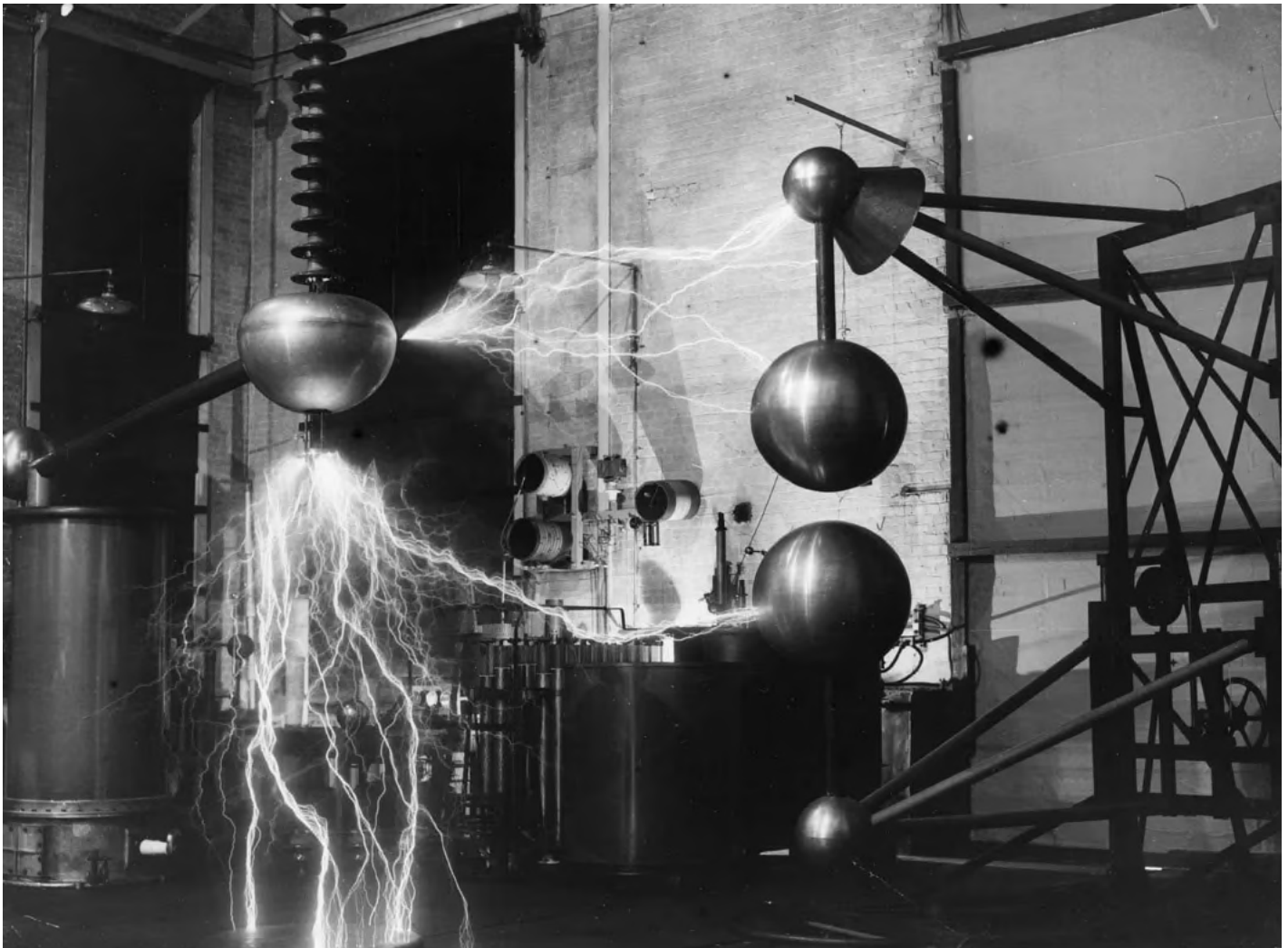
The alpha version of Taro will make it possible to create peer-to-peer Bitcoin and Lightning-native stablecoins.

By Frederick Munawa

🕒 Sep 28, 2022 at 2:46 p.m. EDT

Updated Sep 28, 2022 at 4:03 p.m. EDT

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Hear Alex Thorn share his take on "Bitcoin and Inflation: It's Complicated" at Consensus 2023.

Alex Thorn

Head of Firmwide
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
Lightning Network infrastructure firm Lightning Labs has released a test version of the Taro daemon, a new piece of software that will allow Bitcoin developers to create, send and receive assets on the Bitcoin blockchain.

Taro is a Taproot-powered protocol that was introduced in April and that allows bitcoiners to issue assets such as stablecoins on the Bitcoin blockchain. Those assets can then be transferred over the Lightning Network for instant, high-volume and low-fee transactions.

Read more: [Lightning Labs Raises \\$70M to Bring Stablecoins to Bitcoin](#)

According to Lightning Labs, Bitcoin, Lightning and now, Taro, will make it possible to create peer-to-peer Bitcoin and Lightning-native stablecoins that settle instantly, with low transaction fees and no financial intermediaries.

"With Taro and the incredible developer community, we can build a world where users have [U.S. dollar]-denominated balances and BTC-denominated balances (or other assets) in the same wallet, trivially sending value across the Lightning Network just as they do today," Lightning Labs wrote in its announcement on Wednesday.

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|  | ETH | \$1,627.26 | ▼ 0.95% | → |
|  | BNB | \$304.44 | ▼ 1.37% | → |
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Frederick Munawa

Frederick Munawa is a Technology Reporter for Coindesk. He covers blockchain protocols with a specific focus on bitcoin and bitcoin-adjacent networks.

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| \$23,391.00 | \$1,627.34 | \$6.55 | \$22.69 | \$0.379204 |
| 24h ▼ -0.82% 7d ▼ -3.68% | 24h ▼ -0.96% 7d ▼ -3.16% | 24h ▼ -1.99% 7d ▼ -11.93% | 24h ▼ -2.58% 7d ▼ -8.57% | 24h ▲ 0.07% 7d ▼ -1.6% |

The Lightning Network Unveils the Taro Alpha Daemon for Better Transactions Output

By [Wayne Jones](#)

September 29, 2022 at 3:00 pm

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The Lightning Network has [announced](#) the alpha release of Taro daemon, a new implementation to the Taproot-powered protocol, Taro, to enhance transaction throughput.

Bitcoin at the Helm of Global Transactions

With the possibility of the world's currencies rerouting through the network's bitcoin liquidity, this news signals a significant transition to a multi-asset Lightning Network.

Taro uses Lightning's speed, scalability, and cheap costs in combination with the bitcoin network's security and reliability. In addition to the new protocol, we're also announcing our Series B fundraising to expand Lightning Network infrastructure and increase the number of users.

Additionally, The Taro daemon will get more improved features in the future months, like universe functionality. Universes will make it easier for users and asset issuers to interact with Taro asset data, supply issuance, and offer evidence of asset provenance.

We'll endeavor to integrate the Taro protocol into Ind and bring Taro assets to the [Lightning Network](#) once the on-chain functionality is finished. Lightning channels that may send and receive Taro assets must first be implemented as simple, undisclosed Taproot channels in Ind. We're really eager to introduce the developer community to the new Lightning capabilities.

This initial version of the daemon is released in order to continue soliciting community feedback and building this open source protocol in public. Given the daemon's alpha, testnet-only nature, we encourage developers to investigate how Taro might fit into their products, with the understanding that it will be revised and improved as we move closer to a mainnet release.

Taro Minting, Sending, and Receiving

Taro assets are embedded within existing bitcoin outputs or UTXOs. The developer creates a new Taro asset by committing to special metadata in a Taproot output in an on-chain transaction.

When a new asset is minted, the Taro daemon generates the necessary witness data, assigns the asset to the minter's private key, and broadcasts the newly created bitcoin UTXO to the bitcoin network.

This new outpoint serves as the asset's genesis point and serves as its unique identifier. Taro minting has several key design features, including verifiability, the ability to issue fungible assets such as currencies, and scalability.

Verifiability is a key design feature of the Taro minting process because it is critical that users receiving Taro assets can easily verify that the received assets were minted by the expected issuer.

This verifiability feature is achieved by minting a globally unique asset ID. This asset ID includes the asset genesis field, as shown in the gif above, which describes the provenance, or origination point, of a Taro asset by specifying the genesis point (i.e. the specific on-chain outpoint in which the asset was first issued).

This part of the minting process ensures that the coins received can be traced back to the expected issuance event.

Taro [stablecoin](#) assets must be treated similarly. This asset's fungibility is encoded with the asset type parameter, which is set to NORMAL (as in the gif). Furthermore, minters can link different sets of the same asset under the same family key to achieve the interchangeability properties required for the same assets minted in different tranches.

Taro's on-chain efficiency and scalability are critical, so the design allows for multiple Taro actions to be completed in a single on-chain transaction. The demo above creates a single tranche of Taro issuance, but multiple mints can now be performed in the same bitcoin transaction.

Multiple Taro actions (mining, sending, etc.) will be possible in the future in a single bitcoin transaction. The parameter chain anchor is used to combine multiple Taro transactions into a single bitcoin transaction. The anchor txid parameter describes the transaction in which the new assets were issued, and it will be visible from both the user's local node and any public block explorer.

The Taro address BIP details the data it encodes as well as how implementations can create a Taro address. The characteristics specifying which asset is anticipated to be received are encoded within the address, which makes it impossible for a sender to unintentionally deliver the incorrect asset to a recipient. This is one important feature. With Taro, there are no more horror stories about users unintentionally sending assets to exchanges that do not support those assets.

Lightning Strikes Taro

Taro makes it possible for the Lightning network and bitcoin to both be multi-asset networks. [Users](#) can launch Taro channels, which connect at the edges and communicate with the current Lightning Network.

Taro will take advantage of the network effects created by the infrastructure that has been developed over the last few years as well as the nearly 5,000 BTC that are currently allocated to the network as a global routing currency, rather than starting from scratch and bootstrapping a new ecosystem of nodes and liquidity.

Given an already broad and deep payment channel graph, The Lightning Network and Taro are well positioned to meet this market requirement.

Taro's "edge node" model should result in more volume with no upgrades required as Taro transactions route through BTC. For users on the network's outskirts, this should imply access to all of the Lightning Network's technological benefits, such as instant settlement, low fees, and global reach, as well as their preferred Unit of Account.

Simple, unannounced Taproot channels will go through an initial spec review as well as cross-implementation compatibility tests before being merged into Ind in order to bring Taro to the Lightning Network.

The primary feature of Ind 0.16 is this ongoing work. They'll enter the [next phase](#) of development for enabling Taro assets on the Lightning network once it's completed and launched.

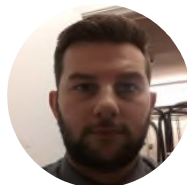
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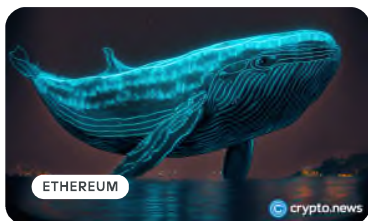


Wayne Jones

Wayne is an all-rounded cryptocurrency writer who has written for several publications in the fintech industry. Having graduated from the University of Essex Colchester, he developed a passion for blockchain technology and has been curious about how the blockchain can modify the traditional financial industry.



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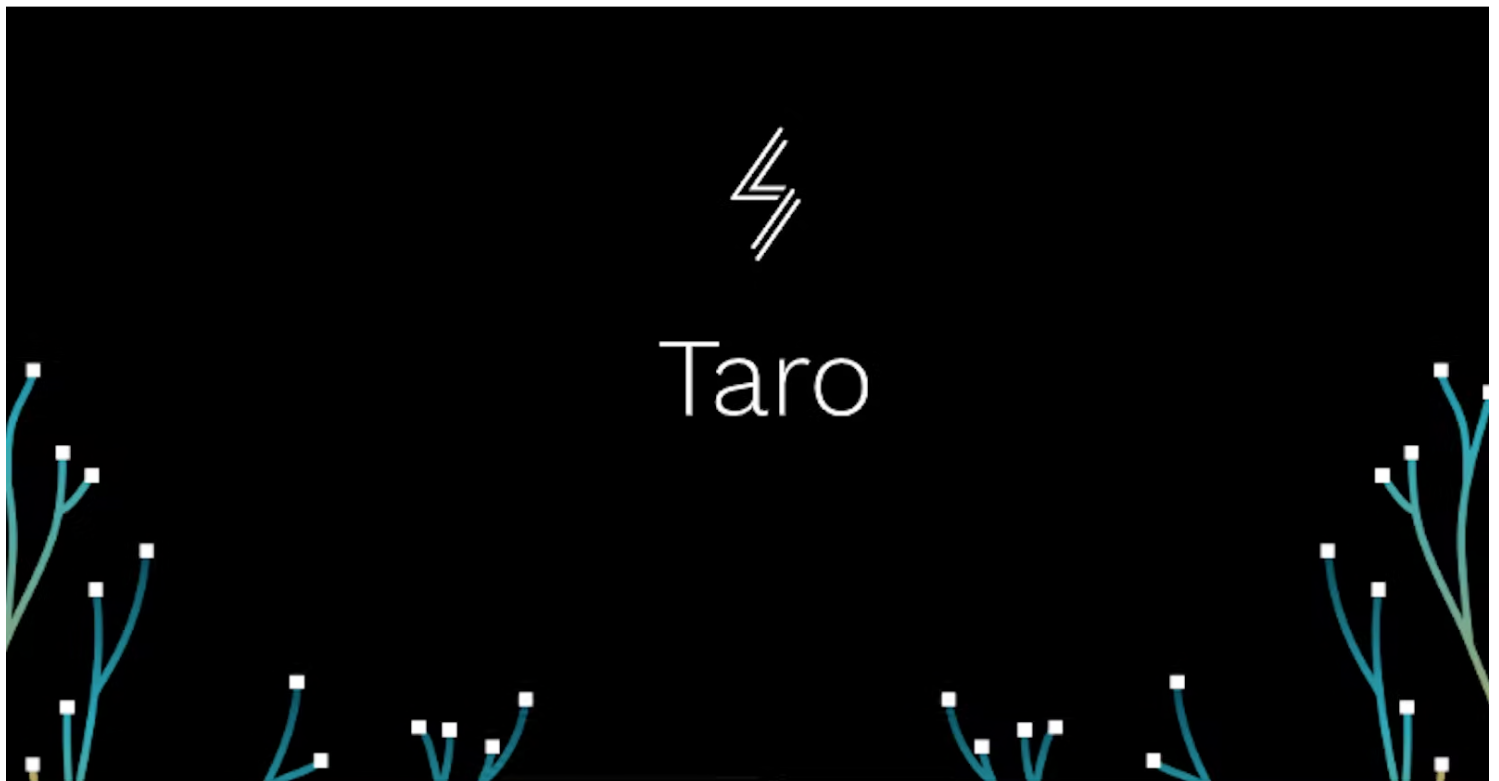
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What does Taro Mean for Bitcoin DeFi?



Pat Rabbitte

Dec 28, 2022 •  7 min read

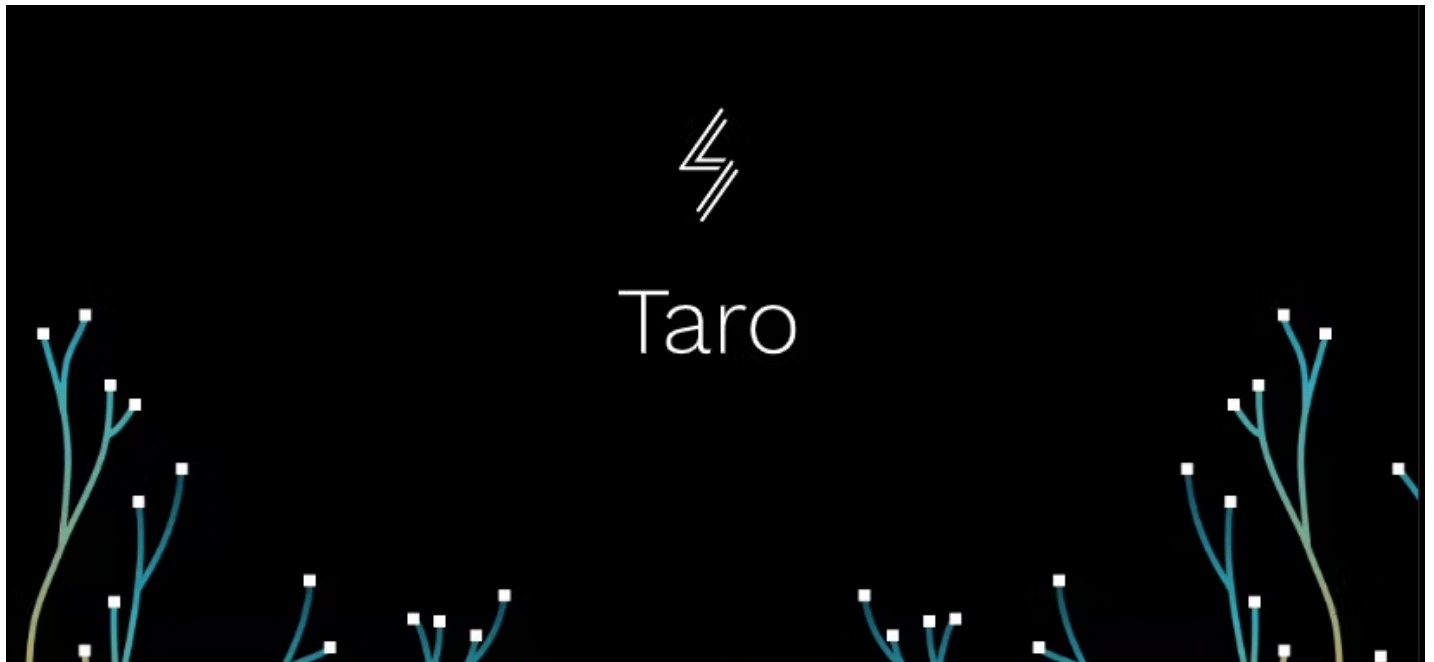


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A consideration of DeFi in recent times has centered on a hive of protocol development relative to Ethereum and other altcoins. 'Bitcoin DeFi' isn't a phrase that's spoken often but the gradual emergence and development of the Taro protocol might be instrumental in changing that.



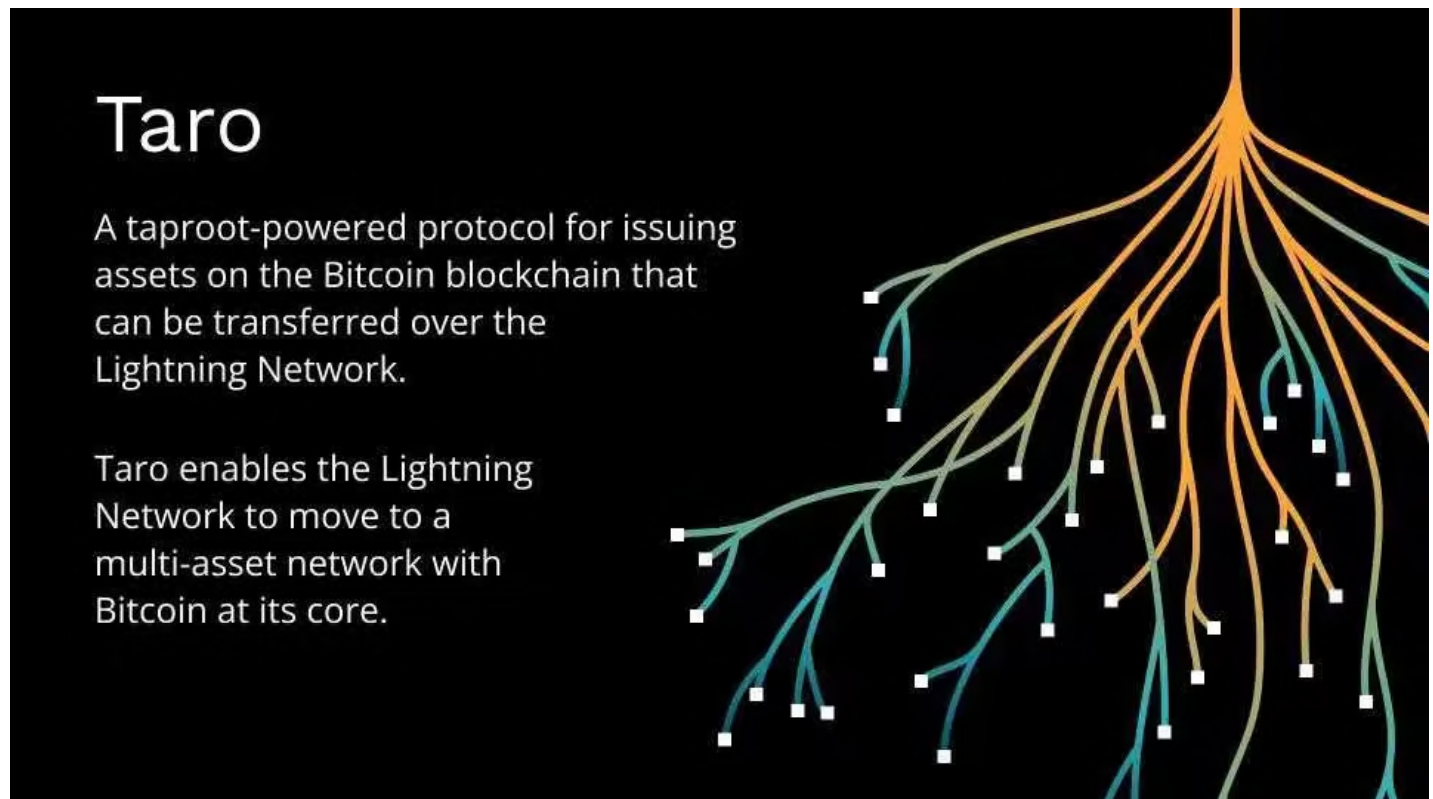
IMG SRC

What is Taro?

Taro is a protocol for issuing assets on the Bitcoin blockchain. One of the exciting aspects of the new protocol is its ability to integrate with the Lightning Network, allowing assets to be transferred over Lightning instantly, with high volume and low fees.

Taro is an abbreviation for Taproot Asset Representation Overlay. The protocol is the result of bitcoin improvement proposals developed and funded by Lightning Network development firm, Lightning Labs.

This is not the first attempt to bring other digital assets to the Bitcoin blockchain. The difference between Taro and other efforts is that it relies on the functionality added via Bitcoin's last major upgrade, Taproot.



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Lightning Labs released the first version of Taro in September. This initial alpha release has gone live on testnet as a precursor to eventually going live on the Bitcoin mainnet once any bugs have been ironed out. Lightning Labs stated that integration with Lightning Network is included in the developmental roadmap for Taro and will be added in the future.

To achieve this, the Lightning Network firm will have to merge Taproot channels into its LND. Work to achieve this is currently ongoing.

In the months ahead, enhanced features will be added to the Taro daemon such as 'universe functionality'. Universes are information repositories that allow users and asset issuers to demonstrate asset provenance and supply issuance, while also making it easier to interact with Taro asset data. Think of a Taro 'universe' as akin to a project's git repository where changes made to project files are tracked.

How it works

Taro assets are embedded within UTXOs — or bitcoin outputs. They can be imagined as UTXOs within a UTXO. A new Taro asset is minted by making an on-chain transaction that commits to special metadata in a Taproot output. As the asset is being minted, the Taro daemon generates witness data and assigns the asset to a private key that the minter holds. The newly created Bitcoin UTXO is then broadcast to the Bitcoin network. This UTXO output is the new asset's genesis proof, acting as a unique identifier.

Using this mechanism, Taro has the potential to enable the Lightning Network as the underlying value transfer protocol of the internet. The Taro protocol will allow for **atomic swaps** between any Taro asset and BTC.

Taproot facilitates complex conditions being set for a Bitcoin UTXO. Taro harnesses Bitcoin's proof of work (PoW) consensus mechanism by using Taproot.

In making use of Bitcoin's UTXO model in this way, Taro has an edge on Ethereum's ERC-20 and ERC-721 standards. It's more secure as it avoids key reuse and more private as balance information is not revealed.

Bitcoinizing the dollar



Tether's USDT stablecoin started out in life on the Bitcoin blockchain via the Omni Layer. It then embraced Ethereum and a number of other blockchains later on in an effort to deal with scalability. Could we see this go full circle with USDT once again hosted on Bitcoin but this time via Taro?

While Taro will facilitate all manner of digital assets, stablecoins are seen as the lowest hanging fruit in terms of immediate use case and utility. According to Michael Levin, Product Manager at Lightning Labs, people in emerging markets want exposure to US dollars. That's a view that was reinforced by Bitcoin proponent and MicroStrategy co-founder Michael Saylor who claimed at a recent conference that people need US dollars in the short term and Bitcoin in the longer term.

Lightning Labs believes that Taro will enable start-ups like Strike, Paxful, Breez and Ibex Mercado to provide their application users with access to bitcoin and lightning-native stablecoins, particularly a USD stablecoin.

Once this functionality is fully built out, it will mean users having USD-denominated and BTC-denominated balances within the one wallet. In this way, the company believes the objective of bringing bitcoin to billions of people will be accelerated.

Other potential use cases

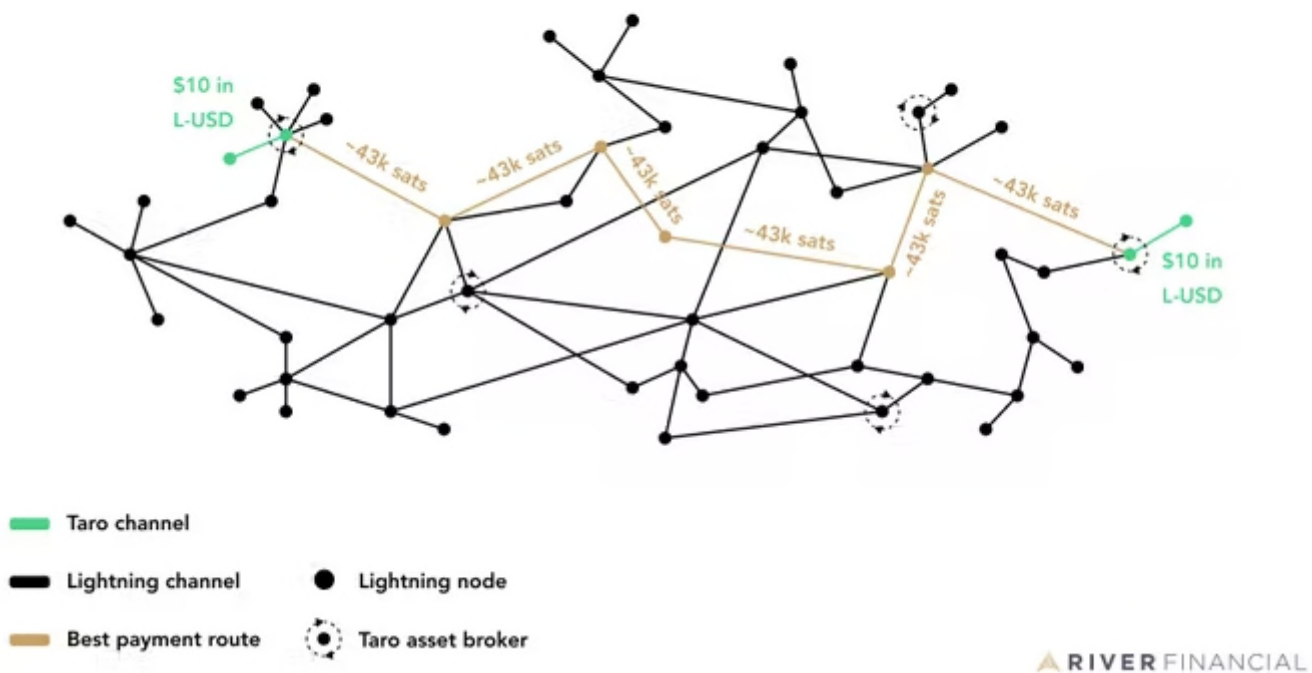
In the same way as the first stablecoin started out on a Bitcoin network layer, the first NFTs also emerged on the Bitcoin network. Once Ethereum came to the fore, any such development moved to its ecosystem. As well as enabling fungible currencies like stablecoins, Taro can also facilitate non-fungible unique tokens like

collectibles or NFTs. It's interesting that the potential at least exists through Taro for NFTs to once again be integrated into the Bitcoin ecosystem.

Wrapped altcoins could also feature within the Bitcoin ecosystem via Taro should anyone have the will to create them. There could be a rationale for doing so in leveraging the security of the Bitcoin network.

This initial version of Taro utilizes a level of programmability similar to that of Bitcoin Script. That provides a familiar segue for developers who are already accustomed to Bitcoin Script to build on the new protocol. However, the protocol allows the flexibility to add new opcodes and additional functionality to meet new use cases as they emerge.

Taro Assets Exchanged on the Lightning Network



IMG SRC

What that demonstrates is that there's more flexibility to come from Taro but we still don't know all of the use cases that will be uncovered just yet. Some Bitcoin-

centric companies have already started to build on Taro. River Financial, a Bitcoin technology and financial services company, has announced that it has acquired River Lightning Services (RLS) as a direct response to the emergence of Taro.

RLS intends to make it easier for other companies to access the new multi-asset functionality that Taro brings. By offering an application programming interface (API), RLS will allow developers to access that functionality without having to run dedicated Lightning Network infrastructure. River Financial CEO and founder Alex Leishman sees Taro as a **major catalyst** for Lightning Network adoption.

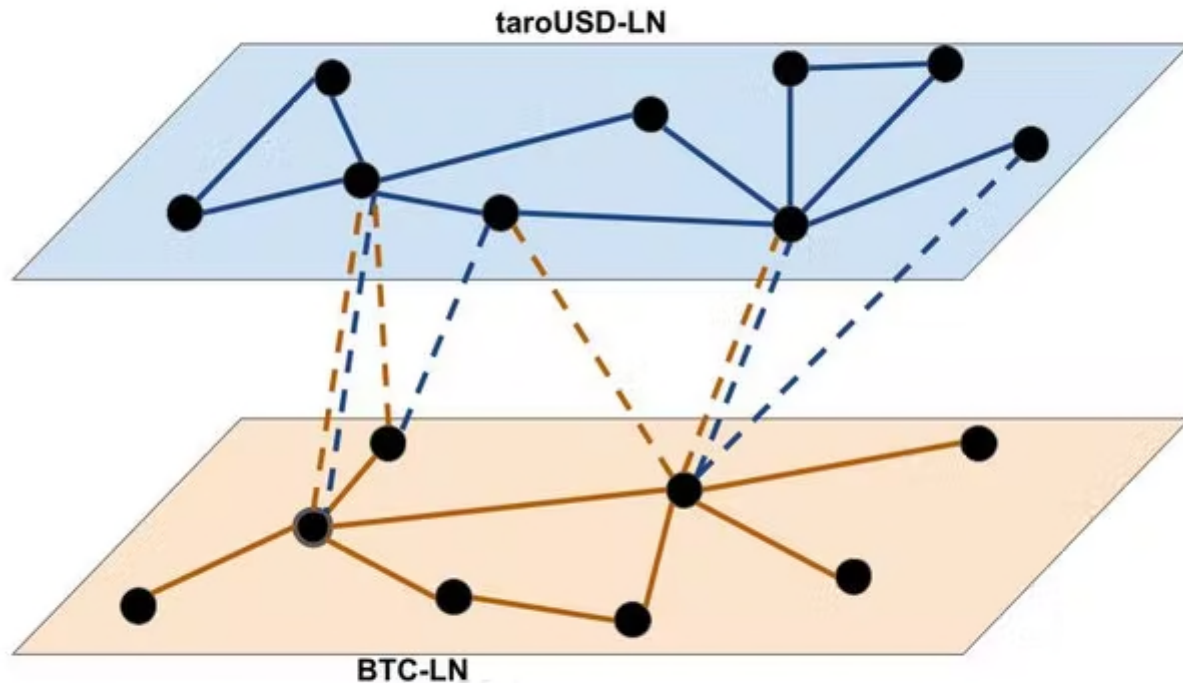
Meanwhile, Bitcoin-centric financial services company NYDIG has established a Lightning accelerator project called Wolf which will seek to advance development, implicating Taro. Founder of Bitcoin VC firm Stillmark, Alyse Killeen, believes that “Lightning Network and Taro are the kind of innovations that can **kickstart** more mainstream adoption of Bitcoin-based payments the way that broadband connections did for the internet two decades ago.”

Bitcoin DeFi vs. Ethereum-centric DeFi

This newfound flexibility that Taro brings with it was lacking back in 2013. Then, Vitalik Buterin and others founded Ethereum to pursue the building of decentralized applications that the Bitcoin blockchain didn’t have the flexibility to facilitate. What followed has been a frenzy of DeFi-related development within the Ethereum ecosystem, spilling over into many alternative blockchains.

A ‘move fast and break things’ approach has prevailed within that ecosystem, resulting in an oftentimes chaotic and imperfect hive of DeFi-related innovation replete with some spectacular hacks along the way.

By comparison, development within the Bitcoin system has been slow. Bitcoin itself has been limited in what can be built. Bitcoin Script limits the complexity of what can be built. Developers who have long since moved over to work on other blockchains have bemoaned this shortcoming.



Taro protocol as an extension of layered development on Bitcoin: IMG SRC

Meanwhile, those builders who have continued to focus on Bitcoin see Bitcoin's lack of flexibility as a feature and benefit. The thinking is that the codebase behind the base layer money has to be restrictive to lessen the odds of it coming undone through a hack or exploit.

Instead the approach has been to apply software updates in a very slow, conservative and considered manner. The Taproot upgrade which has facilitated

Taro went live in November 2021



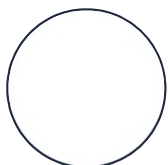
Some Bitcoin proponents have claimed that once fully developed, Taro renders all altcoins irrelevant. In June, Bitrefill CEO Sergej Kotlar claimed that Taro could “shake things up big time in how the whole crypto industry works”.

While there’s no doubt that Taro is an exciting development, there’s a body of work to be done before it in any way serves to undermine the development that has taken place within the Ethereum ecosystem and on other blockchains where DeFi protocols are concerned.

In a funding round earlier this year, Lightning Labs raised \$70 million. That enables the company in its efforts to roll out further Bitcoin and Lightning-related technologies, including the further development of Taro. Keeping in touch with what developers build out on this technology going forward is highly recommended.

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WRITTEN BY

Pat Rabbitte

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Originally from the west of Ireland, I've long since taken to nomadic ways. Most likely you'll find me in some far flung corner of the metaverse.

I'm a freelance writer in the Web3 space. My interest in this area is mission-driven, having started in 2017. I believe that bitcoin is the first step in separating money from state.

Of course 'Web3' is an overarching term that encompasses all manner and means of projects these days. My interest has expanded as the space itself has. If you're doing something in Web3, then I'm already curious about it.

Otherwise, I'm a firm believer that work-to-earn is the crypto primitive that will allow this space to flourish.

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